

Two New Species of *Bulbophyllum* (Orchidaceae) from Brazil

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ABSTRACT. Two new species of *Bulbophyllum* Thouars (Orchidaceae) from Brazil belonging to section *Xiphizusa* (Reichenbach f.) Cogniaux are described and illustrated. Both species are epiphytic, but grow in different vegetational types. *Bulbophyllum gehrtii* E. C. Smidt & Borba is native to cerrado vegetation in São Paulo and Minas Gerais states and is related to *B. plumosum* (Barbosa Rodrigues) Cogniaux, while *B. teimosense* E. C. Smidt & Borba grows in the Atlantic rainforest in southeastern Bahia State and is related to *B. chloropterum* Reichenbach f. According to IUCN Red List criteria, *B. gehrtii* is categorized as Endangered and *B. teimosense* as Critically Endangered.

Key words: Atlantic rainforest, Brazil, *Bulbophyllum*, IUCN Red List, Orchidaceae.

The pantropical *Bulbophyllum* Thouars is the largest orchid genus, including over 1000 species (Vermeulen, 1991; Dressler, 1993). The large majority of species occurs in the Old World, mainly in southeastern Asia, and nearly 70 species are present in the Neotropics. In the most recent checklist for Brazilian orchids, Pabst and Dungs (1975) cited 54 species for Brazil. However, with the addition of recently described species and new occurrences for this country (e.g., Borba et al., 1998; Fraga, 1999, 2004; Toscano de Brito, 2000; Borba & Smidt, 2004; Fraga & Smidt, 2004; Ribeiro et al., 2005), this number has increased to about 65.

The Neotropical *Bulbophyllum* sect. *Xiphizusa* (Reichenbach f.) Cogniaux comprises about 25 species and is characterized mainly by the small discoid, compressed, aggregated, monophyllous pseudobulbs; the long scape with the flowers arranged distichously on a thin rachis; the presence of a conspicuous jugae (extension of the ovary tissue) at the petal base; long fused lateral sepals forming a synsepal in most species; and the petals oblong to

narrowly lanceolate and pilose in most species, with long hairs along the petal margins. In addition, the lip is trilobed; the lateral lobes are erect, obtuse, and sometimes pilose; and the disc is smooth or presents a longitudinal ridge at the middle. For convenience, the lip is sometimes described in two parts: a basal portion called the hypochile, which possesses the lateral lobes and the disc, and the upper portion, known as the epichile. The epichile may be thin and membranaceous or somewhat thick, and in some species it is sessile or more usually constricted; the limb may be flat or concave, and is usually smooth or rarely ciliate in the margin and the face. The column has two long arms at the apex and two small teeth on the adaxial margins.

The species of *Bulbophyllum* sect. *Xiphizusa* are generally epiphytic in forest and cerrado areas. They are occasionally lithophytic in campo rupestre vegetation (e.g., *B. plumosum* (Barbosa Rodrigues) Cogniaux and *B. bidentatum* (Barbosa Rodrigues) Cogniaux). The campo rupestre vegetation of the Espinhaço Range in southeastern Brazil is the main center of species diversity for *Bulbophyllum* sect. *Xiphizusa* (Smidt & Borba, 2007; Smidt et al., 2007), but the section has a disjunct distribution between southeastern Brazil and the northern Andes, with one species in Jamaica. In the course of a revision of the Neotropical *Bulbophyllum* species, we found two new species belonging to section *Xiphizusa*.

1. ***Bulbophyllum gehrtii*** E. C. Smidt & Borba, sp. nov. TYPE: Brazil. São Paulo: São Paulo, Cidade Jardim, 23°32'S, 46°38'W, 23 May 1930 (fl.), A. Gehrt s.n. (holotype, SP 27855). Figure 1.

Haec species *Bulbophyllo plumoso* (Barbosa Rodrigues) Cogniaux similis, sed labello hypochilo pubescente non nisi ad apicem crista inter lobos lateralis laevi et foliis linearibus differt.

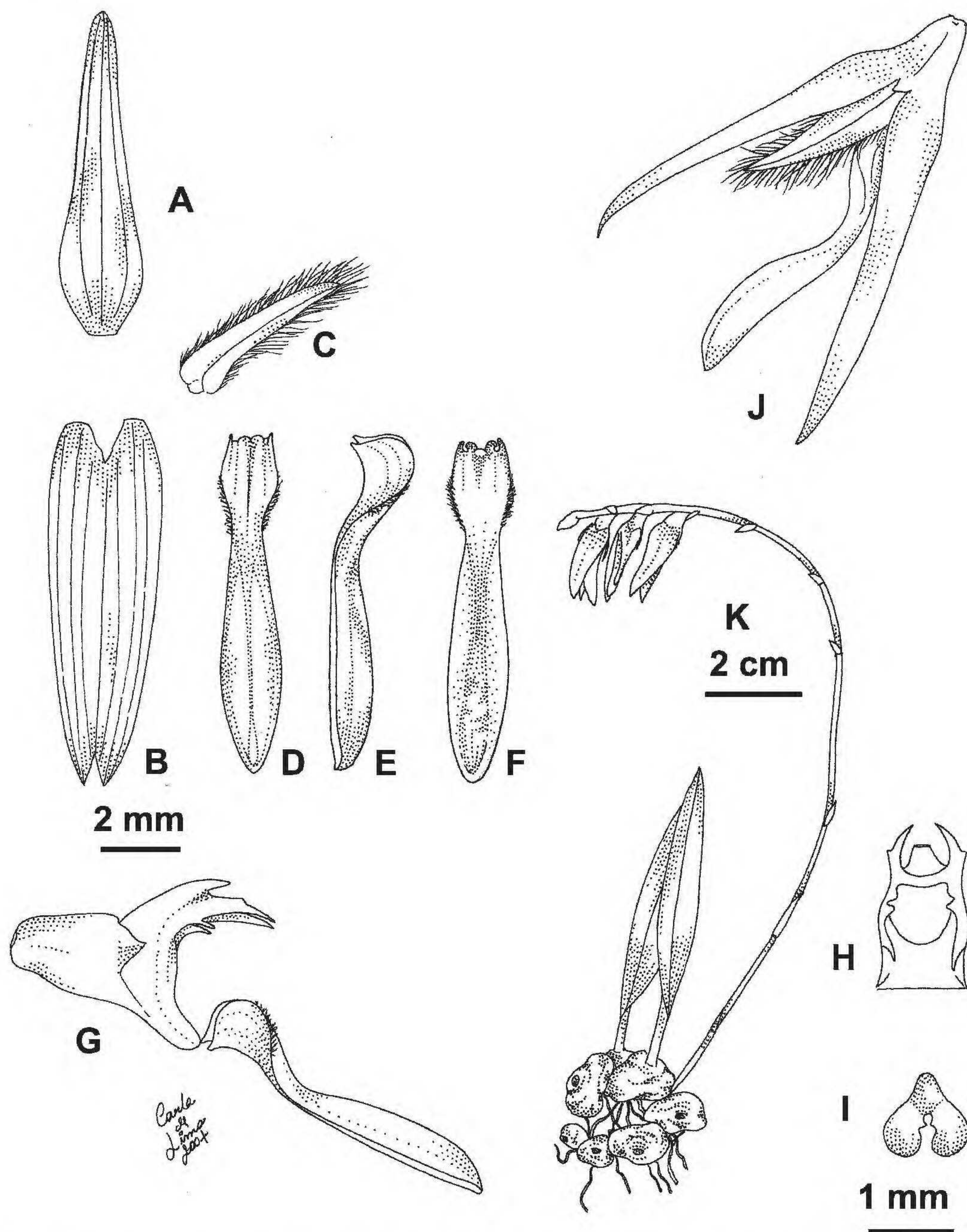


Figure 1. *Bulbophyllum gehrtii* E. C. Smidt & Borba. —A. Dorsal sepal. —B. Fused lateral sepals. —C. Petal. —D. Lip, upper view. —E. Lip, side view. —F. Lip, lower view. —G. Lip and column, side view. —H. Column, lower view. —I. Anther. —J. Flower, side view. —K. Habit. Scale bars: A–G, J = 2 mm; H, I = 1 mm; K = 2 cm. Drawn from the holotype, A. Gehrt, s.n. (SP 27855), by Carla de Lima.

Mostly epiphytic herbs; rhizome inconspicuous; pseudobulbs ca. 0.7×0.7 cm, deltoid, transversely elliptic, green, rugose, monophyllous. Leaves $4.5\text{--}6 \times 0.2\text{--}0.3$ cm, linear, plane, base constricted, apex acute, coriaceous. Inflorescence a raceme to 10 cm,

erect, scape cylindrical, basal bract of the scape inconspicuous, the others not imbricate; bracts of the rachis sessile, not imbricate; rachis 1–2 cm, pendulous, thin, 3 to 5 flowers arranged distichously, anthesis simultaneous. Flowers pendent, membrana-

ceous, jugae present and conspicuous; sepals erect, smooth, brown; dorsal sepal ca. 9×2 mm, lanceolate, plane, 3-nerved, margin glabrous, base dilated, apex acuminate; lateral sepals ca. 9×3 mm, lanceolate, fused from base to near the apex, 3-nerved, margin glabrous, apex acute; petals ca. 4×0.8 mm, lanceolate, slightly falcate, erect, plane, 1-nerved, base sessile, apex acute, margin ciliate with long purple hairs, whitish, translucent, midvein purple; lip ca. 9×1 mm, trilobed, differentiated as epichile and hypochile; hypochile with lateral lobes erect, obtuse, pubescent on the distal half, apex attenuate, disc between the lateral lobes with a smooth discrete ridge; epichile membranaceous, concave, lanceolate, margin glabrous, base constricted, apex acute, mostly brown with purple dots; column glabrous adaxially; stellidia present, erect, entire, apex acute; teeth present, erect, apex acute; column foot short, stigma large; anther incumbent. Fruit not seen.

Distribution and habitat. *Bulbophyllum gehrtii* grows as an epiphyte on cerrado vegetation. The two known collections for this species were found ca. 300 km apart. Within this area, there is a vegetation mosaic of cerrado, Atlantic rainforest, and campo rupestre, where it is possible to find the majority of the Brazilian species of *Bulbophyllum* (Smidt & Borba, 2007).

IUCN Red List category. Because the new species is known only from two Brazilian collections from two of the most extensively sampled areas in Minas Gerais and São Paulo states, with extent of occurrence estimated to be less than 5000 km², its conservation status must be considered as Endangered (EN B1ab[iii]) according to IUCN Red List criteria (IUCN, 2001). The species appears to be endemic to those areas of cerrado vegetation, which is one of the most deforested biomes in the past decades due to implementation of pastures and soybean plantations (Klink & Machado, 2005).

Etymology. This species is named in honor of Augusto Gehrt, who collected the holotype material. Gehrt was one of the main field assistants of Frederico Carlos Hoehne at the inception of the Instituto de Botânica de São Paulo (IBt-SP). He accompanied Hoehne on his initial field trips, mainly in São Paulo State and adjacent regions. Because of Hoehne, Gehrt, and Oswaldo Handro (another important collector at the beginning of the IBt-SP), we know about the orchid species that occurred in important regions of São Paulo State, such as the margins of the Tietê and Pinheiros rivers, which are now unfortunately entirely urban areas.

Relationships. *Bulbophyllum gehrtii* is closely related to *B. plumosum*, differing by having short hairs only on the distal part of the hypochile, by the disc with a smooth ridge, and by the linear leaves. In contrast, *B. plumosum* has a lip with a densely hairy hypochile throughout, a disc possessing a deep ridge with transverse ribs inside, and oblong to widely lanceolate leaves. In addition, the epichile of *B. gehrtii* is concave with an obtuse and entire apex versus plane with an emarginated or occasionally entire apex in *B. plumosum*.

Paratype. BRAZIL. Minas Gerais: Carrancas, 16°33'S, 42°54'W, Apr. 2000 (fl.), E. L. Borba s.n. (HUEFS 116101).

2. *Bulbophyllum teimosense* E. C. Smidt & Borba, sp. nov. TYPE: Brazil. Bahia: Jussari, RPPN Serra do Teimoso, 15°11'S, 39°29'W, Mar. 2003 (fl.), E. C. Smidt & E. L. Borba 308 (holotype, HUEFS). Figure 2.

Species haec *Bulbophyllo chloroptero* Reichenbach f. similis, sed labello hypochilo piloso et floribus minoribus brunneis differt.

Mostly epiphytic herbs; rhizome inconspicuous; pseudobulbs 0.7–1 $\times$ 0.9–1 cm, deltoid, transversely elliptic, green, smooth, monophyllous. Leaves 2–4 $\times$ 0.4–0.6 cm, elliptic, plane, base constricted, apex acute, coriaceous. Inflorescence a raceme to 15 cm, erect, scape cylindrical, basal bract of the scape inconspicuous, the others not imbricate; bracts of the rachis sessile, not imbricate; rachis ca. 6 cm, pendulous, thin, ca. 10 flowers arranged distichously, anthesis simultaneous. Flowers pendent, membranaceous, jugae present and conspicuous; sepals erect, smooth, brown, margin glabrous, apex acute; dorsal sepal ca. 13×3 mm, lanceolate, plane, 3-nerved; lateral sepals ca. 14×3.5 mm, lanceolate, fused from base to near the apex, 3-nerved; petals ca. 5×2 mm, lanceolate, erect, plane, 1-nerved, base sessile, apex acute, margin ciliate with long hairs, brown, translucent, midvein purple; lip 10–12 $\times$ 1–1.5 mm, trilobed, differentiated as epichile and hypochile; hypochile with lateral lobes erect, obtuse, pilose; disc extending beyond the lateral lobes nearly to the middle of the lip, apex attenuate, disc with a smooth ridge, conspicuous; epichile membranaceous, plane, lanceolate, margin glabrous, base constricted, apex acuminate, mostly brown with purple dots; column glabrous adaxially; stellidia present, bidentate, erect, apex acute; teeth present, apex entire; column foot short, stigma large; anther incumbent. Fruit not seen.

Distribution and habitat. *Bulbophyllum teimosense* grows in areas of native and well-preserved Atlantic rainforest, as epiphytes in the forest canopy.

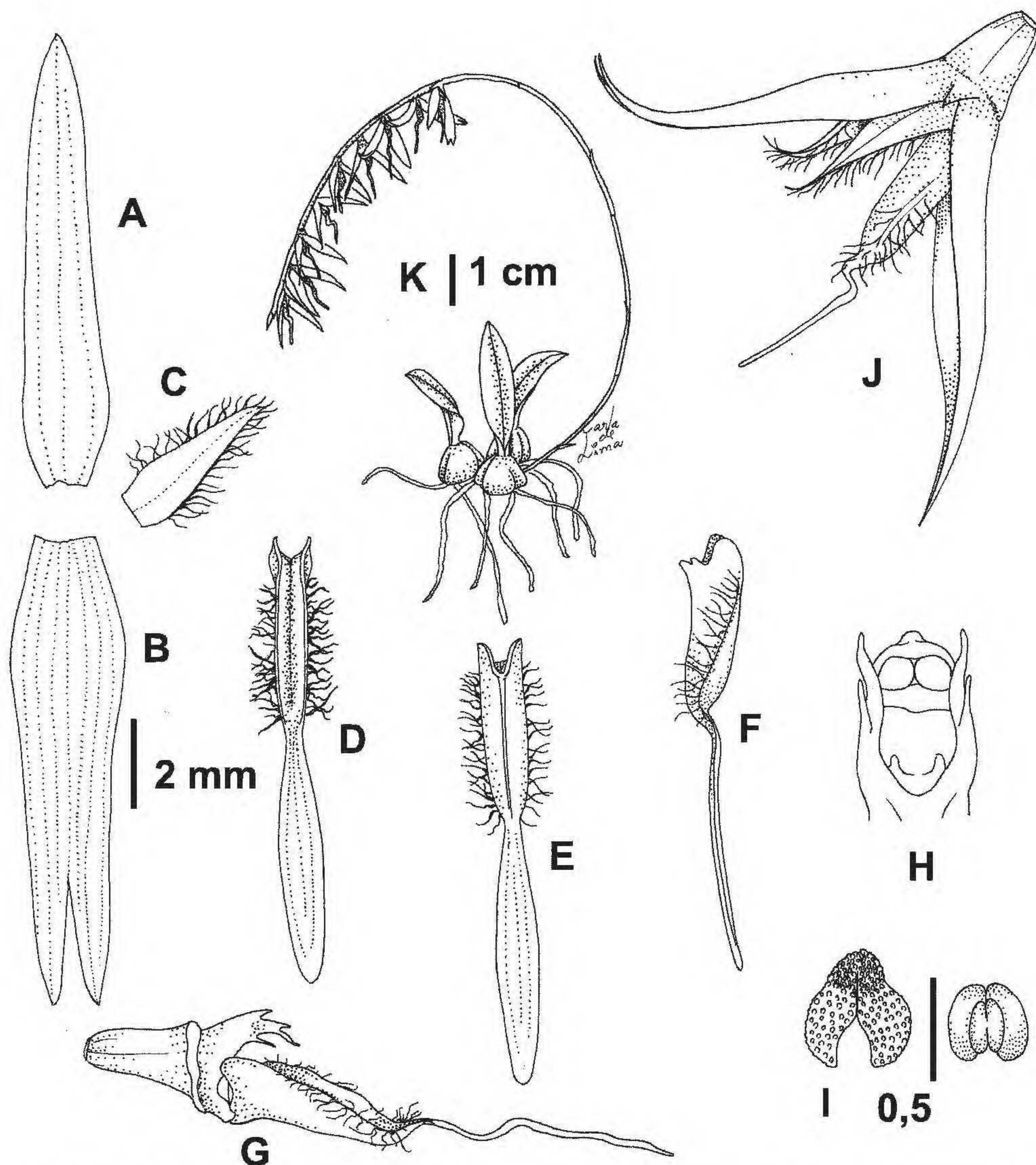


Figure 2. *Bulbophyllum teimosense* E. C. Smidt & Borba. —A. Dorsal sepal. —B. Fused lateral sepals. —C. Petal. —D. Lip, upper view. —E. Lip, lower view. —F. Lip, side view. —G. Lip and column, side view. —H. Column, lower view. —I. Anther and pollinarium. —J. Flower, side view. —K. Habit. Scale bars: A–G, J = 2 mm; H, I = 0.5 mm; K = 1 cm. Drawn from the holotype, E. C. Smidt & E. L. Borba 308 (HUEFS), by Carla de Lima.

It is the only species from *Bulbophyllum* sect. *Xiphizusa* found so far in areas of Atlantic rainforest s. str.; the remaining species occur in gallery forests, cerrado, and campo rupestre vegetation.

IUCN Red List category. Because the new species is known only from the type material, which is from a well-collected region in Bahia State, its conservation status must be considered as Vulnerable (V B1ab[iii]) according to IUCN Red List criteria (IUCN, 2001). Furthermore, this species is microendemic to the Atlantic rainforest, one of the most endangered biomes in Brazil since the colonization of the country,

which is currently reduced to 7% of its original area. This particular region of Atlantic rainforest in southern Bahia is considered one of the principal Brazilian hot spots, presenting high endemism (Mori et al., 1983; Thomas et al., 1998).

Etymology. The new species is named after the Reserva Particular do Patrimônio Natural (RPPN) Serra do Teimoso, in the municipality of Jussari in the southernmost part of Bahia State, where it was found.

Relationships. *Bulbophyllum teimosense* is the second species known in which the disc in the

hypochile extends as far as to the middle of the lip. In all other species of *Bulbophyllum* sect. *Xiphizusa*, in which the lip is clearly differentiated as hypochile and epichile, the disc is located only between the lateral lobes. *Bulbophyllum chloropterum* is the one other species with this characteristic. This species was described by Reichenbach f. in 1849 from a plant discovered by Hoffmannsegg in Rio de Janeiro State, of uncertain locality and indicated only as received from the Orquidário Binot. Recently, Ribeiro et al. (2005) and Toscano and Cribb (2006) reported the occurrence of *B. chloropterum* in the Chapada Diamantina, in central Bahia, growing as epiphytic and rupicolous plants in areas of campo rupestre. The sepals of *B. chloropterum* are green on the outer margins and brown inside, with a purple lip and smooth hypochile, while *B. teimosense* has brown flowers with a brown, purple-spotted lip and a densely pilose hypochile.

Acknowledgments. Thanks are due to Cássio van den Berg for the Latin diagnosis and improvements to the manuscript, Fábio de Barros for Gehrt's biographical notes, and to the American Orchid Society and Fundação de Amparo à Pesquisa do Estado da Bahia for funding this study. E. L. Borba is supported by a grant (PQ2) from Conselho Nacional de Desenvolvimento Científico e Tecnológico. This study is part of the Ph.D. project of the first author, developed at Universidade Estadual de Feira de Santana, Bahia, Brazil.

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